

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) A method to produce uranium dioxide fuel in pellet shape for use in a light water reactor, comprising:

providing an arrangement in pellet form, comprising porous uranium dioxide;
infiltrating the arrangement with a precursor liquid, comprising silicon; and
thermally treating the infiltrated arrangement, ~~such that the precursor liquid is~~

~~converted to a second phase~~; wherein

the step of thermally treating the arrangement comprises:

curing the infiltrated arrangement, converting the precursor liquid into a solid polymer; and

thermally firing the cured infiltrated arrangement, thereby forming nuclear fuel, the nuclear fuel comprising an arrangement having a porous matrix of uranium dioxide, defining pores, and silicon carbide interspersed in the pores of the matrix of uranium dioxide.

2. (Original) The method according to claim 1, wherein the precursor liquid is allylhydridopolycarbosilane.

3. (Canceled).

4. (Canceled)

5. (Canceled).

6. (Currently Amended) The method according to claim 1, wherein the curing of the infiltrated arrangement, comprises heating the infiltrated arrangement to a temperature ~~is~~ between 180 and 400 degrees centigrade.

7. (Currently Amended) The method according to claim 1, wherein the firing of the cured arrangement is at a temperature of between 850 degrees centigrade and 1700 degrees centigrade.

8. (Currently Amended) The method according to claim 7, wherein the firing of the cured arrangement is at a temperature of between 1500 degrees centigrade and 1700 degrees centigrade.

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Previously Presented) The method according to claim 1, wherein the infiltrating of the arrangement with the precursor liquid results in incorporation of the precursor liquid into a center of the arrangement.

13. (Withdrawn) A nuclear fuel, comprising:

an arrangement having a matrix of uranium dioxide; and

silicon carbide interspersed in the matrix of uranium dioxide.

14. (Withdrawn) The nuclear fuel according the claim 13, wherein the arrangement is pellet shaped.

15. (Withdrawn) The nuclear fuel according to claim 13, wherein a total volume of the arrangement is comprised of up to 10% silicon carbide on a volumetric basis.

16. (Withdrawn) The nuclear fuel according to claim 15, wherein the silicon carbide is equally interspersed with the uranium dioxide.

17. (Previously Presented) The method according to claim 1, wherein the arrangement, comprising porous uranium dioxide, is a porous uranium dioxide arrangement.

18. (Currently Amended) The method according to claim 17, wherein the curing of the infiltrated arrangement, comprises heating the infiltrated arrangement to a temperature ~~is~~ between 180 and 400 degrees centigrade.

19. (Currently Amended) The method according to claim 17, wherein the firing of the cured arrangement is at a temperature of between 850 degrees centigrade and 1700 degrees centigrade.

20. (Currently Amended) The method according to claim 19, wherein the firing of the cured arrangement is at a temperature of between 1500 degrees centigrade and 1700 degrees centigrade.

21. (Canceled)

22. (Canceled)

23. (Previously Presented) The method according to claim 17, wherein the precursor liquid is allylhydridopolycarbosilane.

24. (Previously Presented) The method according to claim 17, wherein the infiltrating of the arrangement with the precursor liquid comprises incorporation of the precursor liquid into a center of the arrangement.